Alternatives to Conventional Clearcutting

Back to the Forest Practices Branch

Forests were once viewed as a storehouse of raw material for economic development. We now understand that forests are complex ecosystems that must be treated carefully and skillfully. Society is demanding a higher level of resource stewardship to conserve and protect a wide array of forest-related values.

The Silvicultural Systems program investigates alternatives to conventional clearcutting.

The demand for forest products and the associated economic benefits from harvesting timber continues as well. These benefits include direct and indirect jobs, government revenues, and a variety of forest products that are part of our everyday lives.

Increasingly it is being realized that both economic and environmental factors must be accounted for in forest management. Forest products purchasing decisions in the domestic and international market places are being influenced by demands for good environmental stewardship. The forest industry now understands that their long term prosperity depends more on environmentally sensitive harvesting and less volume of harvest.

The new Forest Practices Code will provide for increased accountability for environmental stewardship. It includes a requirement that the silvicultural system used must be the most ecologically appropriate for the site.

On many sites in B.C., clearcuts, especially those that incorporate some tree retention and are an appropriate size, are ecologically appropriate. The Forest Practices Code addresses the poor design of past clearcuts by strictly limiting cutblock size, requiring riparian reserve strips along streams, allowing for irregular edges that duplicate natural patterns, and restricting harvesting on unstable soils on steep slopes. However, clearcutting can no longer be used as a universal practice. The ecology of some sites, and the social values placed upon them, require quite different silvicultural systems.

The Silvicultural Systems Program is a long-term, province wide program of research, development, demonstration and extension of the full range of silvicultural systems. The objectives of the program are to improve our understanding of alternatives to conventional clearcutting and to identify their ecological, operational and socio-economic implications and opportunities.

The goal of the program is to provide procedures and guidelines that can be applied on a site-specific basis for implementing alternatives to conventional clearcutting.

Past and Current Practices

When logging began in British Columbia in the late nineteenth century, our natural resources seemed virtually inexhaustable. The overriding concern was to harvest timber in the most economical fashion. Reforestation, aesthetics and protection of fish and wildlife habitat were not issues of great concern.

Over the past decade, greater emphasis has been placed on other resource values. Fish, wildlife, water, forage, recreation, aesthetics and biodiversity are considered in harvesting plans.

Significant effort has alredy been devoted to modifying how clearcutting is applied. Recent rends include the use of:

- smaller cutblocks
- more dispersed cutblocks
- longer green-up periods before adjacent areas can be logged
- landscape design to reduce the visual impact of cutblocks
- retention of wildlife trees within cutblocks.

There is more work to be done to reach the goal of environmentally, economically and socially acceptable timber harvesting.

Todays's forest managers are challenged to find a balance between environmental sustainibility and the economic benefits created by the forest industry.

What is a silvicultural system?

A silvicultural system is a set of forestry activities, including harvesting, regeneration and tending, that is applied to an individual stand within a forest to meet specific resource management objectives over the life of the forest.

There are four main silvicultural systems used in British Columbia.

There are four main silvicultural systems used in British Columbia (along with numerous variations). The names of these silvicultural systems reflect the type of forest structure remaining after the initial harvest. They are normally referred to as:

- clearcutting
- seed tree
- shelterwood
- selection

Research Components of the Strategy

Biological Considerations

If we are to understand the biological appropriateness of any silvicultural system,we must increase our knowledge of the complex structure and function of ecosystems and how they respond to different silvicultural treatments.

Biological research under the Silvicultural Systems Program is focussing on these questions. Research topics include:

- Stand dynamics - Successional trends of both the understorey and overstorey plant communities following harvest
- Environmental change - Environmental responses to various silvicultural systems
- Growth responses - The degree and type of growth response that crop tree and other species exhibit following partial cutting.
- Re-establishment research - The response of plants and animals to changes in the environment. and the requirements for forest regeneration.

- Biodiversity - Species diversity, animal habitat requirements, genetic diversity, forest fragmentation, site disturbance, and the sustainibility of forest resources.Model development - Forest management decision-making tools and scientific computer models for different silvicultural systems.

- Insects and disease - The relationships between silvicultural systems and various insects and disease organisms.

- Water - The effects of different silvicultural systems on the quality, quantity and timing of stream flow.

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As public values evolve, so must forest management practices.

Additional forest management issues are being addressed through applied science research and development projects. Topics include:

- Regeneration - The ability to achieve various regeneration objectives.

- Stand tending - Development of appropriate stand densities and treatment regimes for different age classes.

- Soil conservation - strategies and guidelines to limit soil degredation.

- Gene conservation - Guidelines to ensure that gene pools are maintained and that physically superior trees are reserved in partial cutting systems.

- Fire management - Comparison of how silvicultural systems change fuel characteristics and how this affects fire danger and fire supression requirements.

- Growth and yield - Long-term stand responses are being measured and modelled.

Social Considerations

More than 90 per cent of the forest land in British Columbia is publicly owned. Forest management must ultimately reflect the public's values and evolve as values change. The Silvicultural Systems program was initiated to respond to changing public values.

Experience from the use of partial cutting systems in some parts of the province will be passed on to other regions.

One of the clearest messages is that most people do not like the appearance of clearcuts or the effects clearcutting has on tourism and recreational experiences such as hiking and fishing. One of the challenges for the Forest Service is to further integrate the objectives of aesthetics, recreation and timber harvesting creatively using a variety of silvicultural systems.

Socio-economic considerations

Economic analysis is critical to the development of a framework for comparing alternative systems. For example, data on growth response is essential for estimating financial and long-term timber supply impacts of partial cutting. Analyses will include the costs and benefits of both timber and non-timber resource values.

Socio-economic analysis conducted under the Silvicultural Systems Program will study the impacts of various silvicultural systems on employment levels and government revenues.

Operational Trials

Partial-cutting systems are used more frequently in some parts of the province, particularly in the southern interior where the terrain and ecological conditions are favourable for their use. This operational experience will be passed on to the other areas of the province where partial-cutting systems are used infrequently, but where there use appears feasible and could help to meet non-timber objectives.

Additional Information

The ministry recognizes the need to effectively communicate the information generated by the Silvicultural Systems Program to a wide audience. This includes forest managers, scientists, workers, and the public. See our listing of publications and reports for program accomplishments.

For additional information on alternatives to clearcutting in British Columbia, contact:

Forest Practices Branch
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Victoria, BC
Stn. Prov. Gov.
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Alternatives to Conventional Clearcutting

Related Publications and Reports (Partial List)

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Reports

- Windthrow Handbook for British Columbia Forests - a Research Program Working Paper.
- A Stand-Level Guide to the Selection of Reproduction Methods for Regenerating Forest Stands in the Vancouver Forest Region -a guide for field personnel.
- Correlated Guidelines for Management of Uneven-aged Drybelt Douglas-fir Stands in British Columbia - correlated guidelines for uneven-aged stand management.
- Regeneration of Engelmann Spruce and Subalpine Fir in Southern British Columbia following Clearcutting - FRDA Research Memo No. 210.
- Plum Creek Timber Company's Approach to Forest Management: A Case Study - a report on Environmental Forestry for the technical/professional and public audience.
- Silvicultural Systems Program: British Columbia Ministry of Forests - a review of the Silvicultural Systems Program for the technical/professional audience.
- Silvicultural Systems: Their Role in British Columbia's Forest Management - an information booklet for the technical/professional audience primarily.
- PARTCUTS: a bibliography of information relating to partial cutting, for the technical/professional audience.
- A First Look at Visually effective Green-up in British Columbia - a public perception study
- Harvesting Timber and Marketing Logs - A Small Business Forest Enterprise Special Project Report

Referred Journals

- Variation in shade tolerance of Douglasfir, western hemlock, and western red cedar in coastal British Columbia - a journal article by R. E. Carter and K. Klinka.
- Cutting Old-Growth Forests in British Columbia: Ecological Considerations for Forest Regeneration - a journal article by K Kllnka, R.E. Carter, and M. C. Feller.
- Light-growth relationships in Pacific silver fir (Abies amabilis) and subalpine fir (Abie-slasiocarpa) - a journal article by K. Klinka, Q Wang, and G.J.Kayahara.
- Clearcutting: Responsible Forest Management or Environmentally-Destructive Forest Exploitation? - a paper by J.P. Kiinmins.

Program Updates

- Silvicultural Systems in British Columbia: Clearcutting, seed tree, shelterwood, and selection - an information brochure for the public and technical/professional audience,
- Silvicultural Systems Program Update - a two-page overview of the program,
- Silvicultural Systems Research Update (FRDA Research Memo No. 209) - an update summarizing Silvicultural Systems Projects,
- Wildlife Tree Committee Newsletter - a three-page overview of Wildlife Tree Committee activities and products,
- Silvicultural Systems Program Projects: 1990-1995 -a list of projects currently funded or completed under the Systems Program,

Posters

- Silvicultural Systems to meet Management Objectives: depicts four silvicultural systems

Training Courses

- Introduction to Silvicultural Systems - a one day course
- Stand Level Biodiversity for Forest Managers
- Stand Level Biodiversity for Forest Workers
- Partial cutting for Forest Workers - under development
- Forest Practices Code Training
- Uneven-aged Silvicultural Systems: prescribing for success - five day course
- Decision making and Prescription Development for partial cutting - southern Interior
- Decision making and Prescription Development for partial cutting - coastal
- Decision making and Prescription Development for partial cutting - northern Interior, under development

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